

Serial No. 09/966,502

- 2 -

Art Unit: 2828

Tran:

Tran describes, at page 393, column 2, paragraph 1 through page 3945, column 1, paragraph 2:

"... The front mirror of the Fabry-Perot filter was made of three and a half periods of quarter Si- $\text{SiO}_2$  layers and was located at the center of the membrane released from the substrate. The back mirror had a similar structure as the front mirror and was deposited directly on a double-polished silicon substrate. Underneath the back mirror was an evaporated aluminum layer that defined the aperture of the tunable Fabry-Perot interferometer and was used as the bottom electrode. To facilitate optical coupling, the mirror aperture had a diameter of 50  $\mu\text{m}$  or greater, matching the size of a multimode optical fiber. The features at the peripheral region of the membrane are corrugated structures and holes. The corrugated structures enhance the stiffness of the membrane *to maintain an optically flat surface, critical to the performance of the optical filter ...*"

Blomberg:

Blomberg describes an electrostatically tunable Fabry-Perot interferometer produced by surface micromechanical techniques used in optical material analysis as an optical sweeping filter in which the optical measurement is centered at a wavelength  $\lambda$ . The Fabry-Perot interferometer based sensor structure comprises a body block, two essentially parallel mirrors bonded to the body block, of which mirrors at least one is partially transmitting and movable relative to the body block. ... both mirror structures include integral electrode structures capable of effecting an electrostatic force between the mirror structures... At least one of the electrode structures surrounds the optical area so as to achieve a mechanical lever action and avoid galvanic contact

Serial No. 09/966,502

- 3 -

Art Unit: 2828

between the electrode of the movable mirror structure and the electrode of the fixed mirror structure (Abstract, Blomberg). Blomberg also describes at column 4 that the structure includes 'a moveable, transparent mirror fabricated onto the layer 7 with such a structure that the center area 24 of the mirror performs as both the optical area and the movable electrode...'

Combination neither describes nor suggests the claimed invention

In order to properly support a rejection under 35 U.S.C. §103, every limitation in the claims should be shown or suggested by the combination of references. Applicants respectfully submit that the combination of Tran and Blomberg fails to teach every limitation, and thus the rejection should be withdrawn.

The Examiner states at page 3 of the Office Action that Tran et al. shows "... a thin membrane support; and a confocal top mirror set atop said thin membrane support ... with an air cavity being formed between said bottom mirror and said top mirror...It would have been obvious to one of skill in the art to substitute the electrode of A.T.T. D. Tran with the electrode mounted under mirror and a top electrode as membrane support ... because A.T.T. D. Tran ... discloses the top and bottom electrode mounted is different with invention but the same result..." The Examiner also states "... A.T.T.D. Tran et al. does not disclose a reinforce fixed to the outside perimeter of said thin membrane support. However, Blomberg teaches this in Fig. 1b ..."

Applicant's agree that there are many differences between the claimed invention and the combination of references. Applicants have also further amended the independent claims of the present invention to recite that the thin membrane support of the present invention is 'relatively dome-shaped.' Applicant's note that Tran directly teaches away from such a modification to the membrane structure at page 393, column 2, when Trans states "...The corrugated structures

Serial No. 09/966,502

- 4 -

Art Unit: 2828

enhance the stiffness of the membrane *to maintain an optically flat surface, critical to the performance of the optical filter ...*”

Accordingly, for at least the reason that the combination of Tran and Blomberg not only do not teach each limitation of the invention, but also directly teach away from the invention as amended, independent claims 1, 4, 7 and 12 are patentably distinct over the combination of references. Dependent claims 2-3, 5-6, 8-11 and 13-16 serve to add further patentable limitations to their allowable parent claims, but are allowable for at least the reasons put forth above with regard to the parent claims.

Serial No. 09/966,502

- 5 -

Art Unit: 2828

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

3/9/2004  
Date

Lindsay G. McGuinness  
Lindsay G. McGuinness, Reg. No. 38,549  
Attorney/Agent for Applicant(s)  
Steubing McGuinness & Manaras LLP  
125 Nagog Park Drive  
Acton, MA 01720  
(978) 264-6664

Docket No. 120-371  
Dd: 3/9/2004